

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in this application.

1. (Currently Amended) A method for generating a carrier residual signal, comprising the steps of:

causing a light wave having a specific wavelength to enter into an optical modulating unit ~~including~~ comprising an SSB optical modulator;

causing to be included in a light wave emitted from the optical modulating unit a carrier component related to a zero-order Bessel function and a specific signal component related to a specific high-order Bessel function while suppressing signal components other than the specific signal component related to the specific high-order Bessel function; and

setting a ratio of optical intensity between the carrier component and the specific signal component substantially to 1.

2. (Currently Amended) The method for generating a carrier residual signal according to claim 1,

wherein the SSB optical modulator ~~includes~~ comprises two sub-Mach-Zehnder type optical waveguides nested into branch waveguides of a main Mach-Zehnder type optical waveguide.

3. (Currently Amended) The method for generating a carrier residual signal according to claim 2, further comprising the step of:

~~wherein~~ adjusting an optical modulation phase or intensity in the two sub-Mach-Zehnder type optical waveguides or the main Mach-Zehnder type optical waveguide ~~that constitute the SSB optical modulator is adjusted.~~

4. (Currently Amended) The method for generating a carrier residual signal according to claim 1,

wherein the optical modulating unit multiplexes a portion of a light wave inputted to the SSB optical modulator or another light wave having ~~the~~ a same wavelength as the light wave inputted to the SSB optical modulator, with a light wave outputted by the SSB optical modulator.

5. (Currently Amended) A device for generating a carrier residual signal comprising:
an optical modulating unit that ~~includes~~ comprises a light source generating a light wave having a specific wavelength, and an SSB optical modulator,

wherein a light wave emitted from the light source enters into the optical modulating unit,

a light wave emitted from the optical modulating unit ~~includes~~ comprises a carrier component related to a zero-order Bessel function and a specific signal component related to a specific high-order Bessel function while suppressing signal components other than the specific signal component related to the specific high-order Bessel function, and

a ratio of optical intensity between the carrier component and the specific signal component is set substantially to 1.

6. (Currently Amended) The device for generating a carrier residual signal according to claim 5,

wherein the SSB optical modulator ~~includes~~ comprises two sub-Mach-Zehnder type optical waveguides nested into branch waveguides of a main Mach-Zehnder type optical waveguide.

7. (Currently Amended) The device for generating a carrier residual signal according to claim 6,

~~wherein~~ further comprising a film is formed on the two sub-Mach-Zehnder type optical waveguides or the main Mach-Zehnder type optical waveguide ~~that constitute the SSB optical modulator or a portion of the film is removed.~~

8. (Currently Amended) The device for generating a carrier residual signal according to claim 6,

wherein the two sub-Mach-Zehnder type optical waveguides or the main Mach-Zehnder type optical waveguide ~~that constitute the SSB optical modulator~~ includes comprise a portion having

a structure in which ~~arrangement between~~ two branch waveguides in each Mach-Zehnder type optical waveguide are arranged asymmetrically to ~~and~~ electrodes for applying a modulation electric field or a direct current bias electric field to the branch waveguides ~~is asymmetrical to the two branch waveguides.~~

9. (Currently Amended) The device for generating a carrier residual signal according to claim 6,

wherein the two sub-Mach-Zehnder type optical waveguides or the main Mach-Zehnder type optical waveguide ~~that constitute the SSB optical modulator includes~~ comprise

electrodes for applying a modulation electric field or a direct current bias electric field to two branch waveguides in each Mach-Zehnder type optical waveguide, and

adjusting electrodes for adjusting the electric field applied to the branch waveguides.

10. (Currently Amended) The device for generating a carrier residual signal according to ~~any one of claims 5 to 9~~ claim 5,

wherein the optical modulating unit ~~includes~~ comprises a bypass optical waveguide that connects the SSB optical modulator with an input unit and an output unit of the SSB optical modulator.

11. (Currently Amended) The device for generating a carrier residual signal according to claim 10,

wherein the SSB optical modulator and the bypass optical waveguide are formed on ~~the~~ a same substrate.

12. (Currently Amended) The device for generating a carrier residual signal according to claim 10 ~~or 11~~,

wherein an optical intensity adjusting unit, which adjusts intensity of a light wave propagating through the bypass optical waveguide, is disposed in a middle of the bypass optical waveguide.

13. (Currently Amended) The device for generating a carrier residual signal according to ~~any one of claims 5 to 9~~ claim 5,

wherein the optical modulating unit multiplexes a light wave inputted to the SSB optical modulator with a light wave of another light source having the same wavelength as the light wave inputted to the SSB optical modulator in an output unit of the SSB optical modulator.

14. (New) The device for generating a carrier residual signal according to claim 7, wherein a portion of the film is removed.

15. (New) The device for generating a carrier residual signal according to claim 6, wherein the optical modulating unit comprises a bypass optical waveguide that connects the SSB optical modulator with an input unit and an output unit of the SSB optical modulator.

16. (New) The device for generating a carrier residual signal according to claim 7, wherein the optical modulating unit comprises a bypass optical waveguide that connects the SSB optical modulator with an input unit and an output unit of the SSB optical modulator.

17. (New) The device for generating a carrier residual signal according to claim 8, wherein the optical modulating unit comprises a bypass optical waveguide that connects the SSB optical modulator with an input unit and an output unit of the SSB optical modulator.

18. (New) The device for generating a carrier residual signal according to claim 9, wherein the optical modulating unit comprises a bypass optical waveguide that connects the SSB optical modulator with an input unit and an output unit of the SSB optical modulator.

19. (New) The device for generating a carrier residual signal according to claim 11, wherein an optical intensity adjusting unit, which adjusts intensity of a light wave propagating through the bypass optical waveguide, is disposed in a middle of the bypass optical waveguide.

20. (New) The device for generating a carrier residual signal according to claim 6, wherein the optical modulating unit multiplexes a light wave inputted to the SSB optical modulator with a light wave of another light source having the same wavelength as the light wave inputted to the SSB optical modulator in an output unit of the SSB optical modulator.